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Long-Term Debt and Sales Growth Effects on Return on Assets

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ABSTRACT

This study examines the effect of Long-Term Debt (LTD) and Sales Growth (SG) on Return on Assets (ROA) in telecommunication sub-sector companies listed on the Indonesia Stock Exchange (IDX) during 2022–2024. A quantitative causal-associative approach was employed using secondary data from 17 telecommunication companies listed on the IDX. After adjusting for lagged data requirements (Sales Growth calculation), the final sample consisted of 34 firm-year observations during 2023–2024. Panel data regression analysis was performed using EViews 12. The Fixed Effect Model (FEM) was selected through the Chow and Hausman tests, followed by the t-test, F-test, and Adjusted R². Long-Term Debt has a significant negative effect on ROA ($\beta = -1.934$; $p = 0.0010$), whereas Sales Growth has a positive but insignificant effect ($\beta = 0.139$; $p = 0.5694$). Simultaneously, Long-Term Debt and Sales Growth do not have a statistically significant joint effect on ROA at the 5% level (Prob (F-statistic) = 0.0553). The model explains 41.34% of the variation in ROA (Adjusted R² = 0.4134). Long-Term Debt plays a more vital role in managing profitability than Sales Growth. However, given the marginally non-significant simultaneous effect, the combined influence of these variables warrants cautious interpretation when formulating broader corporate policies.

INTRODUCTION

Increasingly competitive global economic conditions require companies to maintain healthy financial performance so that they can survive and grow sustainably. Profitability is one of the main indicators of financial health, since it reflects a company's ability to generate profit from sales under a given cost and financing structure. Return on Assets (ROA) is among the most frequently used profitability indicators, as it measures how effectively a company employs its total assets to generate net income.

Financing structure plays a critical role in this context, particularly in capital-intensive industries such as telecommunications, where large investments in network infrastructure, technology development, and digital services are required. Long-Term Debt (LTD) is commonly used as an external financing source to fund such long-term needs. A higher proportion of long-term debt relative to a firm's capital indicates greater financial risk; if not managed prudently, the resulting interest burden may reduce rather than enhance profitability [6], [7].

In addition to financing decisions, Sales Growth (SG) is another factor that may influence profitability. Sales growth reflects a company's capacity to increase revenue relative to the previous period. Higher sales growth is generally expected to create greater profit-generating opportunities, thereby increasing ROA. However, sales growth does not always translate directly into improved efficiency or profitability, and its effect can vary considerably across industries and time periods [9], [10].

Telecommunication sub-sector companies listed on the Indonesia Stock Exchange (IDX) face substantial capital requirements to expand network infrastructure and improve digital services, making them heavily reliant on long-term debt financing. Nevertheless, prior studies report inconsistent findings regarding the effect of long-term debt on profitability. Suprayogi and Yoga [1] found that long-term debt has a significant effect on the ROA of telecommunication sub-sector companies on the IDX during 2019–2023, while Shikumo et al. [2] reported that optimally managed long-term debt can enhance corporate financial performance. In contrast, studies on other sectors – such as Tri Apriliana et al. [6] and Gaghansa et al. [7] – found that short- and long-term debt do not always significantly improve profitability, suggesting that the relationship is highly context-dependent.

Findings on sales growth are similarly mixed. Pusung, Rumokoy, and Loindong [4] found that sales growth affects ROA in telecommunication companies, and Sánchez and Chivite [9] as well as Khan, Hussain, and Ali [10] reported that sales growth improves profitability through better cost efficiency and operating performance in service-sector firms. However, Choiroh and Purbowati [3] found that several profitability-related indicators, including net profit margin, did not significantly affect profit growth in a different sector, indicating that the sales growth–profitability relationship is not uniform across industries.

These inconsistencies point to a research gap concerning the joint effect of long-term debt and sales growth on ROA, specifically within the telecommunication sub-sector during the most recent 2022–2024 period – a period marked by accelerating digital transformation and increasing capital expenditure requirements in the sector. Table 1 summarizes ten recent related studies that motivate the present research and highlight the inconsistency in prior findings.

Financial Performance

Financial performance reflects a company's ability to manage its resources in order to achieve its primary objective of generating optimal profit. Sound financial performance indicates that a company is able to carry out its operational activities effectively and efficiently, thereby creating added value for shareholders and other stakeholders. Profitability ratio analysis is commonly used to assess financial performance because it directly reflects a company's ability to generate profit from its business activities [24]. In telecommunication companies specifically, financial performance is strongly influenced by financing policy and by the company's capacity to increase revenue. As a capital-intensive industry that requires substantial investment for network construction, technology development, and infrastructure maintenance, telecommunication companies commonly rely on long-term debt financing while striving to increase sales in order to sustain their profitability [17].

Long-Term Debt

Long-Term Debt (LTD) is a company obligation with a repayment period exceeding one year. Rather than being used to meet short-term operational needs, this type of debt supports strategic, long-term corporate activities such as fixed-asset investment, business expansion, and technology development, thereby allowing a company to continue growing even when internal capital is limited [17], [24]. From an accounting perspective, a liability is classified as long-term when a company has an unconditional right to defer its settlement for at least twelve months after the reporting period. In modern financial theory, the use of long-term debt is explained through trade-off theory, which holds that firms weigh the benefits of debt, such as the tax shield, against the costs of financial risk; debt can improve firm performance when used optimally, although its effect on profitability is not fixed and depends on how well it is managed [17]. This relationship is further supported by the view that a high level of leverage tends to have an adverse effect on earnings performance when it is not managed efficiently: leverage can enhance firm performance up to a certain point, but excessive debt suppresses profitability owing to rising interest expense and financial risk [6], [7]. This indicates that the effect of long-term debt on profitability depends heavily on management's ability to structure the firm's capital optimally.

Sales Growth

Sales Growth is an indicator used to assess a company's ability to increase its revenue over time. It reflects a company's success in marketing its products or services and shows the extent to which the market accepts the

business activities carried out. Companies that are able to sustain continuous sales growth are generally regarded as having favorable business prospects and strong competitiveness within their industry [24]. Sales growth represents the percentage change in sales during a given period relative to the previous period, describing the extent to which a company is able to maintain and increase its sales volume from year to year; stable sales growth indicates that a firm's marketing and operational strategies are running effectively despite changing market conditions [28]. In relation to financial performance, sales growth has the potential to increase firm profit provided that it is accompanied by effective cost control; an increase in sales can create opportunities for a company to raise its profitability, although this improvement is not always achieved if operating and marketing expenses increase more than the resulting revenue [17]. Sales growth therefore needs to be managed efficiently so that it makes a positive contribution to net profit.

Return on Assets (ROA)

Return on Assets (ROA) is a financial indicator that assesses a company's ability to generate profit through the effective use of its assets. This ratio shows how well a company manages its assets to produce earnings; a higher ROA indicates that a company is more effective in utilizing its assets to generate profit [17]. ROA also functions as a measure of financial efficiency, describing the level of profit a company is able to achieve from each unit of assets and resources it possesses. A substantial ROA value indicates that a company has successfully utilized its assets to maximize profitability [1].

Hypotheses

Based on the theoretical foundation and the review of previous studies described above, this research positions Long-Term Debt (X1) and Sales Growth (X2) as independent variables that are hypothesized to affect Return on Assets (Y) as the dependent variable. The conceptual framework of this study is presented in Figure 1.

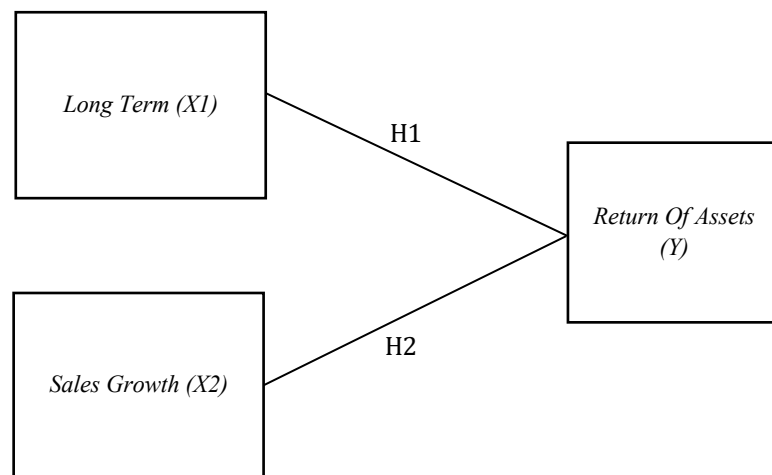


Figure 1. Conceptual Framework of the Research

Based on the conceptual framework, the following hypotheses are proposed:

H1: Long-Term Debt has a significant effect on Return on Assets in telecommunication sub-sector companies listed on the Indonesia Stock Exchange for the 2022–2024 period.

H2: Sales Growth has a significant effect on Return on Assets in telecommunication sub-sector companies listed on the Indonesia Stock Exchange for the 2022–2024 period.

This article is categorized as a research article and is organized following the IMRaD structure. It aims to: (1) analyze the effect of Long-Term Debt on Return on Assets, and (2) analyze the effect of Sales Growth on Return on Assets, of telecommunication sub-sector companies listed on the IDX for the 2022–2024 period.

METHODS

This research employs a quantitative causal-associative design to examine the relationship between Long-Term Debt (X1) and Sales Growth (X2) as independent variables and Return on Assets (Y) as the dependent variable. The object of this study is telecommunication sub-sector companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period. The population consists of all telecommunication sub-sector companies listed on the IDX during the observation period. The sample was selected using purposive sampling based on predetermined criteria: (1) companies listed continuously on the IDX during 2022–2024; (2) companies that published complete audited annual financial reports; and (3) companies providing complete data required for measuring research variables. Based on these criteria, 17 companies were selected. The selected companies are presented in Table 1.

Table 1. Sampled Telecommunication Companies Listed on the IDX

Company Code	Company Name
BALI	PT Bali Towerindo Sentra Tbk.
BTEL	PT Bakrie Telecom Tbk.
CENT	PT Centratama Telekomunikasi Indonesia Tbk.
EXCL	PT XL Axiata Tbk. (now XLSMART)
GHON	PT Gihon Telekomunikasi Indonesia Tbk.
GOLD	PT Visi Telekomunikasi Infrastruktur Tbk.
IBST	PT Inti Bangun Sejahtera Tbk.
ISAT	PT Indosat Ooredoo Hutchison Tbk.
JAST	PT Jasnita Telekomindo Tbk.
KBLV	PT First Media Tbk.
LCKM	PT LCK Global Kedaton Tbk.
LINK	PT Link Net Tbk.
OASA	PT Protech Mitra Perkasa Tbk.
SUPR	PT Solusi Tunas Pratama Tbk.
TBIG	PT Tower Bersama Infrastructure Tbk.
TLKM	PT Telkom Indonesia (Persero) Tbk.
TOWR	PT Sarana Menara Nusantara Tbk.

Source: Indonesia Stock Exchange (processed, 2026).

This study uses secondary data obtained from audited annual financial reports and annual reports published on the official IDX website and each company's official website. The research variables consist of Long-Term Debt (LTD, X1) and Sales Growth (SG, X2) as independent variables, while Return on Assets (ROA, Y) is used as the dependent variable. The operational definitions and measurement of each variable are presented in Table 2.

Tabel 2. Variable Measurement

Variable	Symbol	Measurement
Return on Assets	ROA	$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$
Long-Term Debt	LTD	Long-Term Debt
Sales Growth	SG	$SG = \frac{\text{Sales}_t - \text{Sales}_{t-1}}{\text{Sales}_{t-1}} \times 100$

Panel data regression analysis was employed because it combines cross-sectional and time-series data, allowing more efficient and reliable estimation than using either data type separately. Three estimation models were considered, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The appropriate model was determined using the Chow test and Hausman test. The panel data regression model used in this study is expressed as follows:

$$ROA_{it} = \alpha + \beta_1 LTD_{it} + \beta_2 SG_{it} + \varepsilon_{it} \quad (1)$$

The selected regression model was subsequently used to test the research hypotheses. Hypothesis testing was conducted using the partial *t*-test to examine the individual effect of each independent variable and the *F*-test to evaluate their simultaneous effect on Return on Assets. Furthermore, the coefficient of determination (Adjusted R-squared) was used to assess the explanatory power of the regression model. All statistical analyses were performed using EViews 12 with a significance level of 5%. To account for potential violations of classical assumptions specifically heteroscedasticity and serial correlation in panel datasets the Fixed Effect Model estimation was adjusted using Huber-White/Driscoll-Kraay robust standard errors. This adjustment ensures unbiased standard errors and maintains the validity of regression inferences. The analysis results are presented and discussed in the following section.

RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive statistics were computed for the 34 firm-year panel observations covering 2022–2024, as summarized in Table 3.

Table 3. Descriptive Statistics of the Research Variables

Statistic	LTD	SG (%)	ROA (%)
Mean	526.345	5.259	-1.213
Median	22.834	4.603	3.946
Maximum	8,580.959	71.488	12.973
Minimum	0.000	-74.831	-153.305
Std. Dev.	2,037.296	28.917	28.236
Observations	34	34	34

Source: EViews 12 output (processed, 2026).

Based on the results of the descriptive statistics, $N = 34$ observations were obtained (after adjusting the sample because the 2022 Sales Growth data could not be calculated due to limitations in the 2021 Revenue data). The descriptive statistics indicate substantial variation across the research variables. Long-Term Debt (LTD) recorded an average value of 526.345, ranging from 0.000 to 8,580.959, with a standard deviation of 2,037.296, indicating considerable differences in the use of long-term debt among telecommunication companies. Sales Growth (SG) had an average value of 5.259%, with values ranging from -74.831% to 71.488%, reflecting fluctuations in sales performance during the observation period. Meanwhile, Return on Assets (ROA) recorded an average value of -1.213%, with a minimum of -153.305% and a maximum of 12.973%. The negative mean and positive median (3.946%) indicate that the distribution of ROA was affected by one or more extreme negative observations, resulting in substantial variation in the profitability of the sampled companies.

Panel Data Model Selection

Three panel data regression models, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), were estimated to determine the most appropriate model for the analysis. Model selection was conducted using the Chow test and Hausman test.

Table 4. Chow Test Results

Test	Statistic value	Probability
Cross-section Chi-square	28.273663	0.0293

Source: EViews 12 output (processed, 2026).

The Chow test produced a probability value of 0.0293, which is lower than the 5% significance level. Therefore, the Fixed Effect Model (FEM) was selected for further analysis.

Table 5. Hausman Test Results

Test	Statistic value	Probability
Cross-section random	16.495561	0.0003

Source: EViews 12 output (processed, 2026).

The Hausman test produced a probability value of 0.0003 (< 0.05), indicating that the Fixed Effect Model (FEM) was more appropriate than the Random Effect Model (REM). Therefore, the Fixed Effect Model was used in this study.

Classical Assumption Tests

Classical assumption tests were performed to ensure the Fixed Effect Model estimation satisfied the Best Linear Unbiased Estimator (BLUE) criteria. Four tests were conducted: normality, multicollinearity, heteroscedasticity, and autocorrelation.

Normality Test

Table 6. Normality Test Results

Test	Indicator	Result	Conclusion
Normality	Jarque-Bera Prob. = 0.0357	< 0.05	Residuals not normally distributed

Source: EViews 12 output (processed, 2026).

The normality test was conducted using the Jarque-Bera test. As presented in Table 7, the probability value was 0.0357, which is lower than the 5% significance level. Therefore, the residuals were not normally distributed. This result was the residuals were not normally distributed by the presence of one or more extreme observations in the dataset. Nevertheless, the panel data regression analysis was continued because the selected Fixed Effect Model remained appropriate for hypothesis testing.

Multicollinearity Test

Table 7. Multicollinearity Test Results

Test	Indicator	Result	Conclusion
Multicollinearity	Correlation (LTD, SG) = 0.568	< 0.80	No multicollinearity

Source: EViews 12 output (processed, 2026).

The correlation coefficient between Long-Term Debt (LTD) and Sales Growth (SG) was 0.568, which is below the commonly accepted threshold of 0.80. Therefore, no multicollinearity was detected between the independent variables.

Heteroscedasticity Test

Table 8. Heteroscedasticity Test Results (Glejser)

Test	Indicator	Result	Conclusion
LTD	0.0000	LTD < 0.05	Heteroscedasticity detected
SG	0.2794	SG > 0.05	No heteroscedasticity

Source: EViews 12 output (processed, 2026).

The Glejser test indicated heteroscedasticity in the Long-Term Debt variable ($p < 0.05$), whereas Sales Growth showed no evidence of heteroscedasticity ($p > 0.05$).

Autocorrelation Test

Table 9. Autocorrelation Test Results

Test	Indicator	Result	Conclusion
Durbin-Watson	3.778	Outside 1.5–2.5	Negative autocorrelation indicated

Source: EViews 12 output (processed, 2026).

The Durbin-Watson statistic of 3.778 falls outside the 1.5–2.5 range, indicating negative autocorrelation, the Durbin-Watson statistic indicates negative autocorrelation to the limited number of observation periods after data adjustment. To remedy the detected heteroscedasticity in LTD ($p = 0.0000$) and negative autocorrelation (Durbin-Watson = 3.778), robust standard error correction was applied to the Fixed Effect Model. This technical adjustment corrects parameter variances without dropping variables, ensuring that t-statistics and probability values remain valid for hypothesis testing.

Final Panel Regression Model

The Fixed Effect Model (FEM) was selected as the final estimation model. The estimated regression equation is expressed as follows:

$$ROA_{it} = 1,015.952 - 1.933892LTD_{it} + 0.139055SG_{it} \quad (2)$$

The regression equation indicates that Long-Term Debt (LTD) has a negative coefficient, suggesting that an increase in long-term debt tends to reduce Return on Assets (ROA). Conversely, Sales Growth (SG) has a positive coefficient, indicating that higher sales growth tends to increase ROA. However, the significance of these relationships is determined through hypothesis testing.

Hypothesis Testing**T-Test**

Table 10. Partial t-Test (Fixed Effect Model)

Variable	Coefficient	Probability
LTD	-1.933892	0.0010
SG	0.139055	0.5694

Source: EViews 12 output (processed, 2026).

The regression results indicate that Long-Term Debt (LTD) has a negative and statistically significant effect on Return on Assets (ROA) ($p = 0.0010$). In contrast, Sales Growth (SG) has a positive coefficient but does not significantly affect ROA ($p = 0.5694$).

F Test

Table 11. F-Test Results

Test	Indicator
Prob(F-statistic)	0,055311

Source: EViews 12 output (processed, 2026).

The F-test produced a probability value of 0.055311, which is slightly above the 5% threshold ($p > 0.05$). Consequently, the independent variables do not simultaneously exert a statistically significant effect on ROA at $\alpha = 0.05$. Therefore, interpretations regarding the joint influence of leverage and revenue growth must be treated with caution. The empirical evidence suggests that capital structure decisions and sales trajectories do not operate as a unified systemic driver of profitability across the entire telecommunication sub-sector, but rather function through distinct firm-specific dynamics.

R² TestTable 12. Coefficient of Determination (Adjusted R²) Results

Test	Indicator	Result
Adjusted R-squared	0.4134	41.3%

Source: EViews 12 output (processed, 2026).

The Adjusted R-squared value of 0.413360 indicates that approximately 41.3% of the variation in Return on Assets (ROA) can be explained by Long-Term Debt (LTD) and Sales Growth (SG). The remaining 58.7% of the variation is explained by other factors not included in the regression model.

Effect of Long-Term Debt on Return on Assets

The results show that Long-Term Debt has a significant effect on Return on Assets among telecommunication companies listed on the IDX during 2022–2024, with a negative coefficient indicating that heavier reliance on long-term debt is associated with lower ROA in this sample. This finding suggests that although long-term debt can support infrastructure investment and operational expansion, an excessive debt burden increases interest expense and financial risk, thereby reducing the profitability generated from company assets. Theoretically, this finding relates to signalling theory [26], which explains that a company's financing structure conveys information to investors and creditors about its financial condition: an optimal level of debt signals favorable prospects, whereas excessive debt increases interest burden and depresses earnings.

This result is consistent with Suprayogi and Yoga [1], who found that Long-Term Debt significantly affects Return on Assets among telecommunication sub-sector companies on the IDX, and with Shikumo, Oluoch, and Wepukhulu [2], who noted that long-term debt managed optimally can improve corporate financial performance – implying that poorly managed debt, as observed in the negative coefficient of this study, can instead erode it. Accordingly, telecommunication companies need to manage long-term debt proportionally so that it contributes to, rather than detracts from, profitability.

Effect of Sales Growth on Return on Assets

The results show that Sales Growth does not have a statistically significant effect on Return on Assets among telecommunication companies listed on the IDX during 2022–2024, although the direction of the relationship is positive. This suggests that an increase in sales does not automatically translate into higher asset-based profitability within the observed period, possibly because revenue growth in the telecommunication sector is often accompanied by substantial infrastructure and operating expenditure that offsets incremental profit. This finding is not entirely consistent with Pusung, Rumokoy, and Loindong [4], who found that Sales Growth affects ROA among telecommunication companies, or with Sánchez and Chivite [9] and Khan, Hussain, and Ali [10], who reported that sales growth improves profitability through cost efficiency in service-sector firms. The difference may be explained by variation in sample period, capital intensity, and cost structure across studies. Nevertheless, sales growth remains conceptually important as a signal of market acceptance and competitive strength [26]; telecommunication companies are therefore encouraged to keep pursuing sales growth through service innovation, market expansion, and digital technology adoption, while simultaneously controlling costs so that revenue growth is more fully converted into profitability.

CONCLUSIONS

Based on the Fixed Effect Model, Long-Term Debt has a significant negative partial effect on ROA, whereas Sales Growth shows no significant partial effect. Crucially, as the simultaneous model is non-significant at the 5% significance level (Prob (F-statistic) = 0.0553), joint impacts should not be generalized. Strategic decisions in this sector should carefully balance debt-servicing capability rather than relying on top-line sales growth alone. The findings also indicate that Long-Term Debt and Sales Growth jointly explain 41.3% of the variation in Return on Assets, while the remaining 58.7% is attributable to other factors beyond the scope of the research model. These results suggest that the management of long-term debt plays a more important role than sales growth in improving the profitability of telecommunication companies during the observation period. This study provides empirical evidence that contributes to the development of financial management literature, particularly regarding the relationship between capital structure, sales growth, and corporate profitability in the telecommunication sub-

sector. Furthermore, the findings may serve as a reference for future studies in developing more comprehensive profitability models by incorporating additional financial variables.

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